SECTION 80

ENGINEER'S WORKSHOP, RESTROOM, STORES, AND REPAIR EQUIPMENT

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80.1 REFERENCES

(Not Used)

80.2 INTRODUCTION

This Section contains the Contractor Design and Provide general requirements for the Engineer's Workshop, Engineer's Restroom, and Storage areas. Refer to Section 19 of the Technical Specification for outfitting the Chief Engineer's Office, Engineer's Dayroom, Locker Room, and EOS.

For WSF Fleet-wide Standardization purposes, End No. 1 of the Vessel shall always be considered the bow, and this designation shall delineate port and starboard, fore and aft wherever they are addressed in the Technical Specification.

80.3 GENERAL

An Engineer's Workshop, Storage, and Crew areas shall be provided adjoining the EOS. The spaces shall be located as described in Section 50 of the Technical Specification. The storage areas, dayroom, restroom, office and workshop shall be sized as set forth in Section 1B of the Technical Specification. The workshop area shall be located adjacent to the Engineer's Control Room and Chief Engineer's Office areas.

80.4 ENGINEER'S WORKSHOP AREA AND EQUIPMENT

The Workshop and adjoining machinery space areas shall be provided with the following items:

A. Workshop - One (1) 48 inch × 108 inch steel workbench, 10.2# (¼") steel plate bench-top, rolled front and rear (2-inch) edge, complete with extra heavy angle iron framing. Workbench shall be fitted with a combination pipe/machinist bench vise, six (6) inch jaw width with ¼ inch through six (6) inch pipe capacity. Maximum vise jaw opening shall be nine (9) inches, with swivel base, WILTON Model C-3, or equal. The workbench shall have tool stowage beneath suitable for three (3) STANLEY-VIDMAR (one (1) each, 33-inch high - SEP1012, SEP1038, SEP1071), or equal, storage cabinets.

   Each drawer shall have positive stops and latches.

B. Workshop - One (1) 30 inch × 72 inch steel workbench, 10.2# (¼") steel plate bench-top, rolled front (2-inch) and rear edge, complete with extra heavy angle iron framing, and 3¾ inch back and end stops (top front of end stops shall have 1½ inch radius) Workbench shall be fitted with a combination pipe/machinist bench vise, six (6) inch jaw width with ¼ inch through six (6) inch pipe capacity. Maximum vise jaw opening shall be nine (9) inches, with swivel base, WILTON Model C-3, or equal. The workbench shall have tool stowage beneath suitable for two (2) STANLEY-VIDMAR (33-inch high - SEP1001), or equal, storage cabinets. Bracing shall be provided to secure the mobile storage cabinets in a seaway. Tool boards, 36 - 48 inches high × ¼ inch thick aluminum, shall be provided. For bidding purposes provide up to thirty (30) LF of tool boards, installed as up to three (3) separate tool boards.

   Each drawer shall have positive stops and latches.

C. Workshop - Provide two (2) metal tool lockers approximately 72 inches wide × 24 inches deep × 7 feet high. Locker shall have sliding doors and five (5) adjustable shelves. Fixed shelves shall be suitable for holding 250 pounds of tools on each shelf. It shall be possible to lock the entire locker using a padlock.

D. Workshop - Provide two (2) McMASTER-CARR #5216K45, or equal, 25'- ⅜" ID automatic-winding hose reel with steel enclosure assemblies (to include McMASTER-CARR #5585K22, or equal, bumper stops). Installation shall include

all piping fittings, and root ball valve. Location shall be determined by the WSF Staff Chief Engineer.

E. Workshop - One (1) clean rag drum w/ JUSTRITE #H26730 self-closing cover, thirty (30) gallon each; and three (3) JUSTRITE #H09300, or equal, oily materials waste can, ten (10) gallon size each.

F. Each Engine Room - One (1) clean rag drum w/ JUSTRITE #H26730 self-closing cover, thirty (30) gallon each; and one (1) JUSTRITE #H09300, or equal, oily materials waste can, ten (10) gallon size each.

G. Workshop - One (1) GRIZZLY Model G3358, or equal, 2 HP, 110V/220V, combination Milling/Drilling machine, **with optional stand**, #G1075 52-pc. clamping set, and GRIZZLY Model G7066, or equal, 5" tilting/swivel milling vise.

H. Workshop - One (1) GRIZZLY Model G1010, or equal, ½ HP, 110Vac/220Vac, 4" × 6" metal-cutting band-saw.

I. Workshop – One (1) GRIZZLY Model G7948, or equal, 12-speed, 1½ HP, 110Vac/220Vac, 20" floor drill press, with GRIZZLY Model H2633, or equal, angle vise.

J. Engine Room No. 2 – One (1) purifier workbench as set forth in the *CENTRIFUGAL PURIFIER WORK STATION* Subsection in this Section of the Technical Specification.

K. Workshop - One (1) pedestal grinder, BALDOR Catalog No. 8107wd, or equal, 8 inch × 1 inch × ¾ inch deluxe industrial two (2) stone, 3450 RPM, 208Vac, single-phase, 60 hz, with water pot, adjustable tool rest and two (2) incandescent lighted heavy glass eye shields wired through the grinder off/on switch. One (1) wheel shall be aluminum oxide, medium grit, and one (1) wheel silicon carbide of coarse grit. One (1) grinder pedestal, BALDOR Catalog No. GA16R

L. Workshop - One (1) GRIZZLY Model G9249, or equal, belt driven gap bed lathe, 12 inch swing (diameter) × 37 inch between centers, 2 HP, 220Vac, 4-way and rocker style tool posts, with heavy duty stand, chip tray, splash guard, taper attachment, 6" 3-jaw chuck, 8" 4-jaw chuck, 10" face plate, tail stock with live center, drill chuck and dead center, quick change gear box, steady and follow rests.

M. Workshop - One (1) 25 ton Hydraulic press, OMEGA LIFT EQUIPMENT Model 60253, or equal, H-frame, floor, hand pump, with arbor plates.

N. Welding Station, Engine Room No. 1 - One (1) AC/DC welding machine, manual shielded metal arc, 480Vac, single-phase, 60 Hz, with a 30 to 250 Amp output range. The welder shall be of the fixed type, suitably grounded and provided with the necessary electrical components, safety features and accessories in accordance with IEEE-No. 45, and Section 87 of the Technical Specification. The welder shall be provided with thirty (30) feet each of work and ground cable, electrode holder and

ground clamp. Welding cable shall be flexible, durable, well insulated and adequately sized to carry the required welding current. Only cable designed especially for welding shall be provided. The welding cables shall be neatly stowed on reels adjacent to weld booth in a safe manner. Connect welder to power using an APPLETON ELECTRIC Style 2, 3W4P, 60 Amp receptacle part no. ADRE6034-125, and 3W4P, 60 Amp plug, part no. ACP6034BC, or equal. The receptacle shall be wired for all three (3) phases, but the welder plug shall be connected as required for single-phase.

Fabricate and provide a wheeled aluminum cart to secure the above welder to and make it roll-able. The cart shall be provided with four (4) 8" × 2" wheels with side wheel brakes. Two (2) wheels shall be fixed type and two (2) shall be swivel type. Cart shall be provided with a pull handle and lifting capabilities to allow for lifting from the EOS flat to the Lower Vehicle Deck with an overhead hoist.

Provide one (1) 100 LF power supply extension cable assembly to include male and female APPLETON ELECTRIC, Style 2 connectors matching those serving the machine above. The same matching connectors shall be provided on the Engine Room and Sun Deck remote power supplies stations set forth on the One-Line Diagram.

O. Welding Station, Engine Room No. 1 - One (1) steel welding platen table, 10.2# (¼") steel plate bench-top, 72 inches wide × 36 inches deep × 30 inches high, complete with extra heavy angle iron framing. One (1) combination pipe/machinist bench vise, six (6) inch jaw width with ¼ inch through six (6) inch pipe capacity. Maximum vise jaw opening shall be nine (9) inches, with swivel base, WILTON, Model C-3, or equal. A dedicated ventilation exhaust for the welding station shall be provided as set forth in Section 64 of the Technical Specification.

P. Pipe Station, Engine Room No. 1 – One (1) pipe rack with 6 tiers minimum of hooks and trays suitable for multiple ten (10) foot lengths of piping and tubing (⅜ inch to 2 inch sizes). One (1) pipe die/tool board, ¼ inch thick aluminum, suitable for an assortment of pipe dies shall be located nearby. Pipe Station shall be fitted with a bench yoke pipe vise, with pipe benders and pipe rests and, RIDGID TOOL Model 40080 (SKU: 332170), ⅛ inch - two (2) inch pipe capacity, or equal. Design shall be developed in consultation with the WSF Representative

Q. Port Storeroom Area – One (1) GRAINGER, Item # 3Z814, or equal, 25 - 48 gallon, parts washer/soak tank, with one (1) GRAINGER, Item # 5A342 flow through nylon brush.

R. Engine Room No. 1 - One (1) Filter Crusher with piped drain to Used Oil Tank. OBERG, Model P-350, 1 HP - 3-phase motor, UL listed, NEMA 12 enclosure, or equal, custom sized to allow smaller than standard foot print. For waste oil drain piping, see the *LUBE OIL FILLING, OVERFLOW AND TRANSFER SYSTEMS* Subsection in Section 57 of the Technical Specification.

S. Tank Room No. 1 - One (1) 30 inch × 30 inch steel workbench, 10.2# (¼") steel plate bench-top, rolled front and rear (2 inch) edge, complete with extra heavy angle iron framing installed adjacent to the service sink provided in Section 20 of the Technical Specification. Provide a tool board, 30 - 48 inches high × ¼ inch thick aluminum, above the back of the work bench.

Two (2) electrical power and distribution panels shall be provided in the Work Shop dedicated to the operation of future Work Shop equipment. One (1) panel shall be 120 Vac, 100 Amp, with a minimum of six (6) 2-pole spaces. The other panel shall be 208 Vac, 100 Amp, with a minimum of four (4) 3-pole spaces.

The Engineer's Workshop shall be provided with Ship's Service compressed air manifolds for use with portable air driven tools. Manifolds with two (2) air connections shall be provided at each work bench, lathe, drill press, mill/drill, and grinder. See Section 72 of the Technical Specification.

All heavy equipment, all cabinets, and all benches shall be bolted to the deck to prevent moving or tipping in rough seas. Arrangement of the Workshop, location, and type of outfitting shall be developed in consultation with the WSF Representative.

80.5 PORT AND STARBOARD ENGINEER'S STORAGE AREAS

The Port and Stbd Engineer's Storage areas shall be provided with bays of 4-tier adjustable steel shelves. Each bay shall be approximately 48 inches wide × 36 inches deep. Shelving arrangements within the Engineer's Stores and Crew Locker Room. Stores areas shall be comprised of multiple "horseshoe" shape layouts to maximize storage capabilities. Shelving arrangements shall take into account the hull's dead rise in way of those areas. The Contractor shall work closely with WSF to produce an acceptable for shelving layout.

NOTE: For the purposes of maintaining electronic and other costly precision spare parts for the entire Vessel in a clean, controlled environment, and also to provide for a monitored central location for efficient inventory control, the Engineer's Port Storeroom shall be provided with at least 1,100 square feet of shelving and the Engineer's Starboard Storeroom shall be provided with at least 600 square feet of shelving.

The storage area shall be segregated for stowing such items as engine parts, pump parts, and electrical equipment, separately. Shelves shall be constructed of steel not less than No. 16 USSG and have one (1) inch high lips at front, back and sides. Varying spacing shall be provided from about thirty (30) inches at the bottom to about twelve (12) inches at the top. Shelving shall extend approximately seven (7) feet above the floorplates. All shelving parts shall be galvanized. Arrangement of stowage areas, shelving type, and functionality shall be optimized in consultation with the WSF Representative during Phase II Design.

80.6 WELDING WORK STATION

The work station shall be provided in the forward, upper level (14'-0" level, see the *OTHER KEY DIMENSIONS* Subsection in Section 1B of the Technical Specification.), Stbd side of Engine Room No. 1, and consist of the welding table as set forth in the *ENGINEER'S WORKSHOP AND EQUIPMENT* Subsection above, 480Vac electrical power connection for the weld machine, 120 Vac service outlet and four (4) 120 Vac 2×20W fluorescent light fixtures (GLAMOX Part No. GLI 218, or equal) in the hood. See the *LIGHTING FIXTURES* Subsection in Section 92 of the Technical Specification for additional requirements. Ship's Service air connection w/fittings, POTW supply hose bibb, suspended partition weld curtains with 30" high widow panels (McMASTER-CARR #5592T42 or equal, as to type) to enclose open perimeter (area within the coamings) areas, and a lighted power exhaust hood as set forth in Section 64 of the Technical Specification. The perimeter of the work station area shall be surrounded by a 1½ steel coaming and all floor plates within that coamed area shall be as set forth in the *FLOORPLATES* Subsection in Section 79 of the Technical Specification, except the floor plates shall be ASTM A786 steel large pattern diamond plate material. See Sections 64, 90 and 92 of the Technical Specification.

80.7 CENTRIFUGAL FUEL OIL PURIFIER WORK STATION

The work station shall be provided in Engine Room No. 2, consisting of one (1) 36 inch wide × 24 inch deep steel topped workbench, with 24"W×36"H tool board, 10.2# (¼") steel plate benchtop, rolled front (2 inch) and rear edge (4 inch), complete with extra heavy angle iron framing. The workbench shall have one (1) extra heavy, 6-inch deep drawer of welded steel construction, the drawer is to have a width of 24 inches with a 100 lbs. capacity, ball bearing drawer slides, sea stops in full open and closed position, and a lower steel storage shelf. The work station shall be located adjacent to the diesel oil centrifuge. Provide one (1) 120 Vac service outlet at the work station for maintenance purposes.

80.8 ENGINEER'S RESTROOM

The Contractor shall provide a unisex Engineer's Restroom (Head/Shower) below the Lower Vehicle Deck and convenient to both the EOS Engineer's Dayroom, and Engineer's Work Shop. All sanitary fixtures, accessories and installation shall meet the requirements of Section 20 of the Technical Specification. The installation shall include a water closet, lavatory, shower stall (36 inch × 36 inch minimum) w/glass door, soap dishes, paper towel dispenser, toilet paper dispenser (single roll type), robe hooks, towel racks, cloth towel roller dispenser and mirrored medicine chests (see Section 20 of the Technical Specification). The Engineer's Restroom should be sized as set forth in Section 1B of the Technical Specification.

An electric clothes washer (GENERAL ELECTRIC - Profile Harmony™ WPGT9350CWW – 4.0 cu. ft. King-size, Energy Star®, or current WSF approved equivalent) and electric clothes dryer (GENERAL ELECTRIC - Profile Harmony™ DPGT750ECWW – 7.3 cu. ft. king-size, or current WSF approved equivalent) shall also be provided inside the Engineer's

Restroom. The washer and dryer color shall be "WHITE". All water, drain, vent, and electrical service shall be provided for this installation. The dryer vent shall be routed through a lint trap and up to the Vehicle Deck to prevent the vent gases from venting to the interior of the Vessel and terminated to the weather through a louver with a fire damper. The louver assembly shall be designed to meet the requirements of the *Terminals; Diffusers, Grilles, and Louvers* Subsection in Section 12 of the Technical Specification.

80.9 ENGINEERING STAFF LOCKER ROOM

The Contractor shall provide an Engineering Staff Locker Room below the Lower Vehicle Deck (Main Deck) in or near the Engineer's Restroom and convenient to both the EOS and Engineer's Work Shop. The space shall be fitted with fifteen (15) lockers as set forth in Section 19 of the Technical Specification. The Locker Room shall include bunker gear stowage as set forth in Section 13 of the Technical Specification. The Locker Room area shall be sized as set forth in Section 1B of the Technical Specification.

80.10 LIFTING GEAR

Trolley beam systems shall be provided and sized to safely handle all equipment requiring repair or maintenance. Beams shall extend over the top of both sides of each Main Engine and above each SSDG, and past the front of the diesel engine/generators, joining together and proceeding outboard to access a 48"×72" clear opening equipment removal trunk up through the machinery casing to the Lower Vehicle Deck to allow placement of removed parts on portable carts. Provide a trolley beam extending outboard into the Lower Vehicle Deck area to allow for loading equipment onto and from trucks.

Provide a 48"×72" clear opening equipment removal trunk at the Lower Vehicle Deck level above the Engineer's Stores location with a minimum of a three (3) ton trolley system at it's top, with locking device and a 2½ ton (minimum) pneumatic, driven hoist. Design and provide an aluminum pallet type basket with twelve (12) inch expanded metal sides, solid bottom, and 60 degree 4-leg bridle sling rigging to attach to the pneumatic hoist, for transporting provisions to/from the Lower Vehicle Deck and the Engineer's Stores below. Size basket to maximum size that will pass through the clear opening. Structural design of the basket shall be 1½ times the rated load of the hoist. Provide two (2) aluminum 4 inch × 1½ inch × ¼ inch channel portable cross braces which will span the above opening coaming and provide a landing to store the empty basket on when not in use. Channels shall be notched at each end where they rest on the opening coaming to securely hold in place.

Provide for each Engine Room a minimum of a three (3) ton trolley system with locking device, a 2½ ton (minimum) pneumatic, driven hoist.

Provide a trolley system in each Reduction Gear Room consisting of three (3) transversely oriented beams above the reduction gear with a minimum of a three (3) ton trolley system with locking device and a 2½ ton (minimum) pneumatic, driven hoist. The beams shall

extend from the outboard extent of the deck plate area on one side (Port) of the space to the outboard deck plate extent on the other side (Stbd) of the space.

Provide a Workshop Workbench trolley system with a beam located above the full length of the main workbench and proceeding outboard through double doors to the Engineer's Stores and up the above mentioned 48"×72" clear opening equipment removal trunk up through the machinery casing to the Lower Vehicle Deck level. Provide a trolley beam fore and aft in the trunk area along with a trolley beam extending outboard into the Lower Vehicle Deck area to allow for loading equipment onto and from trucks. Provide two (2) ¼ ton trolleys with locking device and two (2) ¼ ton chain hoists. Hand hoists shall be YALE LOAD KING, or equal.

All equipment removal trunks shall be provided with double doors in the inboard and outboard bulkheads of the Machinery Casing at the Lower Vehicle Deck level. The bottom of these double doors shall be six (6) inches above the curbing and the top of the doors shall be as high as possible to suit the Contractor's design.

Refer to Section 50 of the Technical Specification regarding lifting gear for machinery rooms.

The trolley beam systems shall be prepared and coated same as set forth in Section 14 of the Technical Specification under **TABLE 14-1**, *Interior Bulkheads and Overheads* for Engine Rooms.

All weight bearing elements of the trolley beam systems shall be weight tested in accordance with Section 101 of the Technical Specification.

80.11 SPARE PARTS AND INSTRUCTION MANUALS

Provide a list of recommended spare parts and special tools for those items that are Contractor furnished, together with parts lists and instruction manuals necessary to maintain and service provided equipment and accessories in accordance with the requirements of Sections 86 and 100 of the Technical Specification.

80.12 TESTS, TRIALS AND INSPECTIONS

Tests shall be in accordance with Section 101 of the Technical Specification.

Inspections shall be performed as defined in this Section and in Sections 1 and 2 of the Technical Specification.

80.13 PHASE II TECHNICAL PROPOSAL REQUIREMENTS

Deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be provided during the Phase II Technical Proposal stage of Work in accordance with the requirements of Section 100 of the Technical Specification.

See Section 100 of the Technical Specification for additional requirements regarding technical documentation.

80.14 PHASE III DETAIL DESIGN AND CONSTRUCTION REQUIREMENTS

The deliverables required by Section 100 of the Technical Specification and the Authoritative Agencies, shall be provided during the Phase III Detail Design stage of Work in accordance with the requirements of Section 100 of the Technical Specification.

See Section 100 of the Technical Specification for additional requirements regarding technical documentation.

(END OF SECTION)